Chemistry 226
Organic Chemistry Laboratory I

Catalog Description: CHEM 226. Organic Chemistry Laboratory. 2-0-6. Prerequisite: CHEM 110. Prerequisite or co-requisite: CHEM 222. An introduction to the study of the properties and preparation of organic compounds.

Prerequisite: CHEM 110 Prerequisite or corequisite: CHEM 222

Required Texts and Other Materials:
1 – *The Organic Chem Lab Survival Manual, A Student's Guide to Techniques,* 7th Edition by Zubrick
2 - Safety goggles
3 - Laboratory notebook. Bound, duplicating with tear out sheets

Required Supplemental Readings: None

Student Outcome Goals and Objectives:
At the end of this course the student will be able to

- Learn the 12 principles of green chemistry
- Compare and contrast green chemical routes with older methods
- Use melting point/mixed melting point to characterize compounds
- Extract products from various solvents,
- Recrystallize products,
- Perform fractional and simple distillation,
- Synthesize various organic compounds,
- Analyze and identify organic compounds by infrared spectroscopy, thin-layer chromatography, gas chromatography, and nuclear magnetic resonance.

Schedule of Experiments

(Reading assignments from Zubrick in parentheses.)

Day	Experiment	Day	Experiment
		19 August	Check In/Safety
24 August	Solventless Aldol (ch. 1-4, 7, 9, 11, 13; pp. 88-93)	26 August	*Start* Solid Phase Photochemistry *Start* Ethanol from Molasses
31 August	Greener Bromination of E-Stilbene (pp. 146, 203-4)	2 September	Distillation of Ethanol from Molasses (ch. 19, 20, 34, 36)
7 September	*Labor Day Holiday*	9 September	NMR (ch. 35) and GC (ch. 32)
14 September	NMR and GC	16 September	Dehydration (ch. 10) and IR (ch. 34)
21 September	Synthesis and Recrystallization of Adipic Acid	23 September	Synthesis and Recrystallization of Adipic Acid*

28 September	*Finish* Solid Phase Photochemistry	30 September	Review
5 October	Midterm	7 October	Liquid CO_2 Extraction
12 October	Oxidative Coupling of Alkynes: Glaser-Eglington-Hay Coupling (ch. 21, 28)	14 October	Oxidative Coupling of Alkynes: Glaser-Eglington-Hay Coupling
19 October	Friedel-Crafts Reaction: Acetylation of Ferrocene	21 October	Friedel-Crafts Reaction: Acetylation of Ferrocene*
26 October	Electrophilic Aromatic Iodination	28 October	Biodiesel
2 November	Microwave Synthesis of 5,10,15,20-Tetraphenylporphyrin (ch. 29)	4 November	Microwave Synthesis of 5,10,15,20-Tetraphenylporphyrin
9 November	Combinatorial Chemistry[2]	11 November	Nucleophilic Substitution of Fabric Dyes[1]
16 November	Review	18 November	Final
23 November	*Thanksgiving Holiday*	25 November	*Thanksgiving Holiday*
30 November			

Course Content: **[1]freshly washed 100% cotton material or T-shirt required by each student**
[2]samples require 24 hours incubation so each student will be required to return the next day (not class day) to view the plates

Method of Evaluation:
All students will perform experiments using proper safety practices.

Notebook: 25 points/experiment	14 experiments	350 points
*Formal reports on adipic acid, acetylferrocene	(50 pts. each)	100 pts
Midterm Exam		100 points
Final Exam		100 points
		650 points

Grades will be determined using the following scale:
A: 90-100 B: 80-90 C: 70-80 D: 60-70 F: <60